

REMARKS

Claims 1-20 are pending in this application. By this Amendment, the specification is revised to correct typographical errors, and claim 20 is added. Support for new claim 20 is found at, for example, paragraph 15 of the specification.

I. Priority and Declaration

Applicants note that priority has been acknowledged. However, the priority documents had not been scanned into the electronic record. Accordingly, Applicants submit herewith a Claim for Priority and certified copy of the priority document.

Furthermore, Applicants submit herewith a Submission of Declaration and Declaration for review and scanning into the electronic record.

II. Specification Objection

The specification was objected to for allegedly containing various informalities, including grammatical errors and typographical errors. Accordingly, as requested by the Patent Office, Applicants submit herewith a substitute specification correcting such informalities.

III. Rejection Under 35 U.S.C. §112, second paragraph

Claims 12-19 were rejected under 35 U.S.C. §112, second paragraph, as allegedly being indefinite. This rejection is respectfully traversed.

Claim 12 recites a metallic oxide film of high dielectric constant made by the method recited in claim 1. Such method produces a metallic oxide film of high dielectric constant that comprises constituent elements of the substrate mixed with the constituent elements of a given metallic oxide which are grown on the substrate. Namely, the structure of the metallic oxide film of high dielectric constant as achieved by the method comprises an entirely different structure than the Pr_2O_3 layer taught by Osten. This feature is described more fully below. Moreover, this distinguishing structure is also now recited in new claim 20.

Further, it is clear that the "constituents" referred to among claims 12-19 refers to the constituents of the constituent elements of the substrate and the constituent metallic oxide elements of the metallic oxide film.

Finally, paragraph 23 clearly describes how the entire metallic oxide film 12 is diminished and converted into the metallic oxide film 13 of high dielectric constant. Thus, according to this process there is no interface layer.

For the foregoing reasons, Applicants submit that claims 12-19 comply with 35 U.S.C. §112, second paragraph. Therefore, reconsideration and withdrawal of the rejection are respectfully requested.

IV. Rejection Under 35 U.S.C. §102(b)

Claims 1-7 and 9-19 were rejected under 35 U.S.C. §102(b) as allegedly being anticipated by Osten, H.J. et al., "High-K Gate Dielectrics with Ultra-Low Leakage Current Based on Praseodymium Oxide," IEEE (2000), pp. 28.5.1-28.5.4, ("Osten"). This rejection is respectfully traversed.

The Patent Office alleges that by thermally treating the substrate and given metallic oxide film with anneals of up to 1000°C, Osten necessarily meets the limitation drawn to mixing constituent elements of the substrate with constituent elements of the metallic oxide film as recited in claim 1. Applicants strenuously disagree with this allegation.

Osten simply teaches a Pr_2O_3 layer formed on the Si substrate by means of molecular beam epitaxy. See page 28.5.1, column 2, Experimental section of Osten. Osten does not teach or suggest that the constituents of the metallic oxide layer and the constituents of the substrate are mixed to produce the metallic oxide film of high dielectric constant as recited in claim 1.

Furthermore, the Pr_2O_3 layers were heated up to 1000°C in Osten simply to demonstrate the heat resistance of the Pr_2O_3 layer, not to mix the constituent elements. See

Abstract of Osten. In fact, throughout the article, Osten does not teach or suggest thermally treating the substrate and the metallic oxide film to mix constituent elements of the substrate with constituent metallic oxide elements of the metallic oxide film and to form the metallic oxide film of high dielectric constant on the substrate as recited in claim 1. Osten merely indicates that the Pr_2O_3 layer can survive annealing at 1000°C for 15 seconds, not that any constituent elements are mixed.

For the foregoing reasons, Applicants submit that Osten does not teach or suggest the features recited in claims 1-7 and 9-19. Reconsideration and withdrawal of the rejection are thus respectfully requested.

V. Rejection Under 35 U.S.C. §103(a)

Claim 8 was rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over Osten as applied to claim 4. This rejection is respectfully traversed.

As explained above, Osten does not teach or suggest all of the features recited in claim 1. In particular, Osten does not teach or suggest thermally treating the substrate and the metallic oxide film to mix constituent elements of the substrate with constituent metallic oxide elements of the metallic oxide film to form the metallic oxide film of high dielectric constant on the substrate as recited in claim 1.

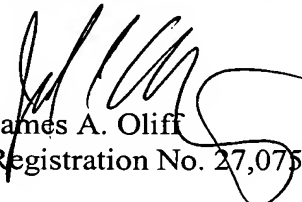
As claim 1 is allowable over Osten, Applicants submit that dependent claim 8 is similarly allowable. Thus, reconsideration and withdrawal of the rejection are respectfully requested.

VI. Conclusion

In view of the foregoing, it is respectfully submitted that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-20 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in even better condition for allowance, the Examiner is invited to contact the undersigned at the telephone number set forth below.

Respectfully submitted,


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